Executive Briefing
The Open Systems Approach

Keeping up with the changing world...

…how open systems can benefit your program.

Exploring open systems

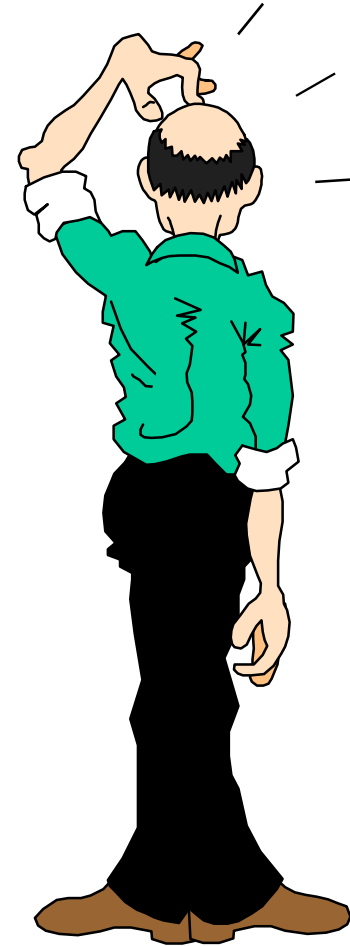## Five Questions we're going to answer...

- What are open systems?
- What are the benefits?
- How they are being used?
- How can <u>you</u> use open systems?
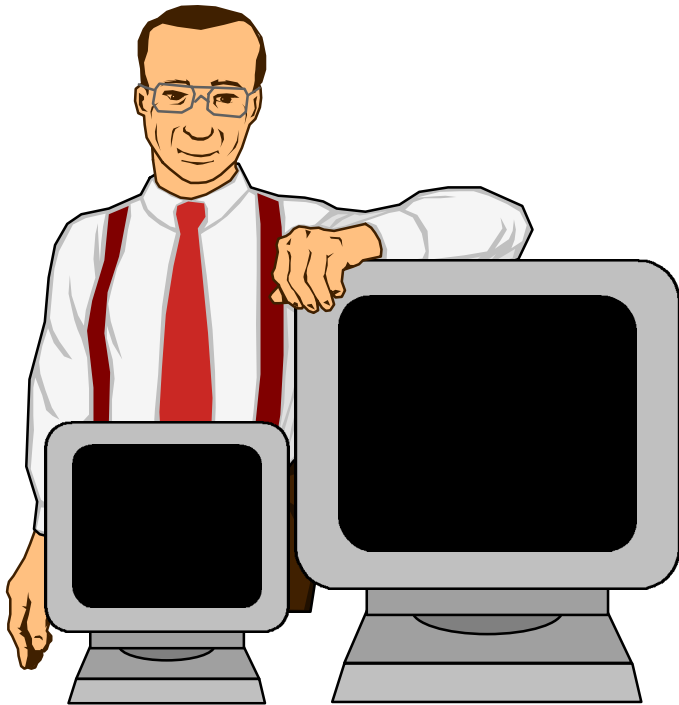- Where can <u>you</u> get help developing an open systems strategy?

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And, one we want to ask...

When you hear the term "open systems," what comes to mind?

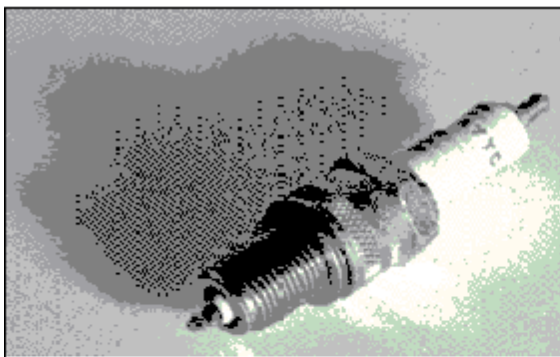# Many people think open systems applies only to...

- Software
- Computers
- Electronics

These use an open systems approach, but <u>open systems is a much broader concept</u>.

Here's some common open systems...

In weapons systems, the adoption of the open systems approach is nothing short of...

Revolutionary!

Here's how open systems got started

Dr. Paul G. Kaminski, the former Under Secretary of Defense for Acquisition and Technology

Key Milestones

29 June 94: Directed "Greater use of performance and commercial specifications and standards." *(SEC DEF)*

29 Nov 94: Use an open systems approach for acquisition of weapons systems electronics *(USD(A&T))*
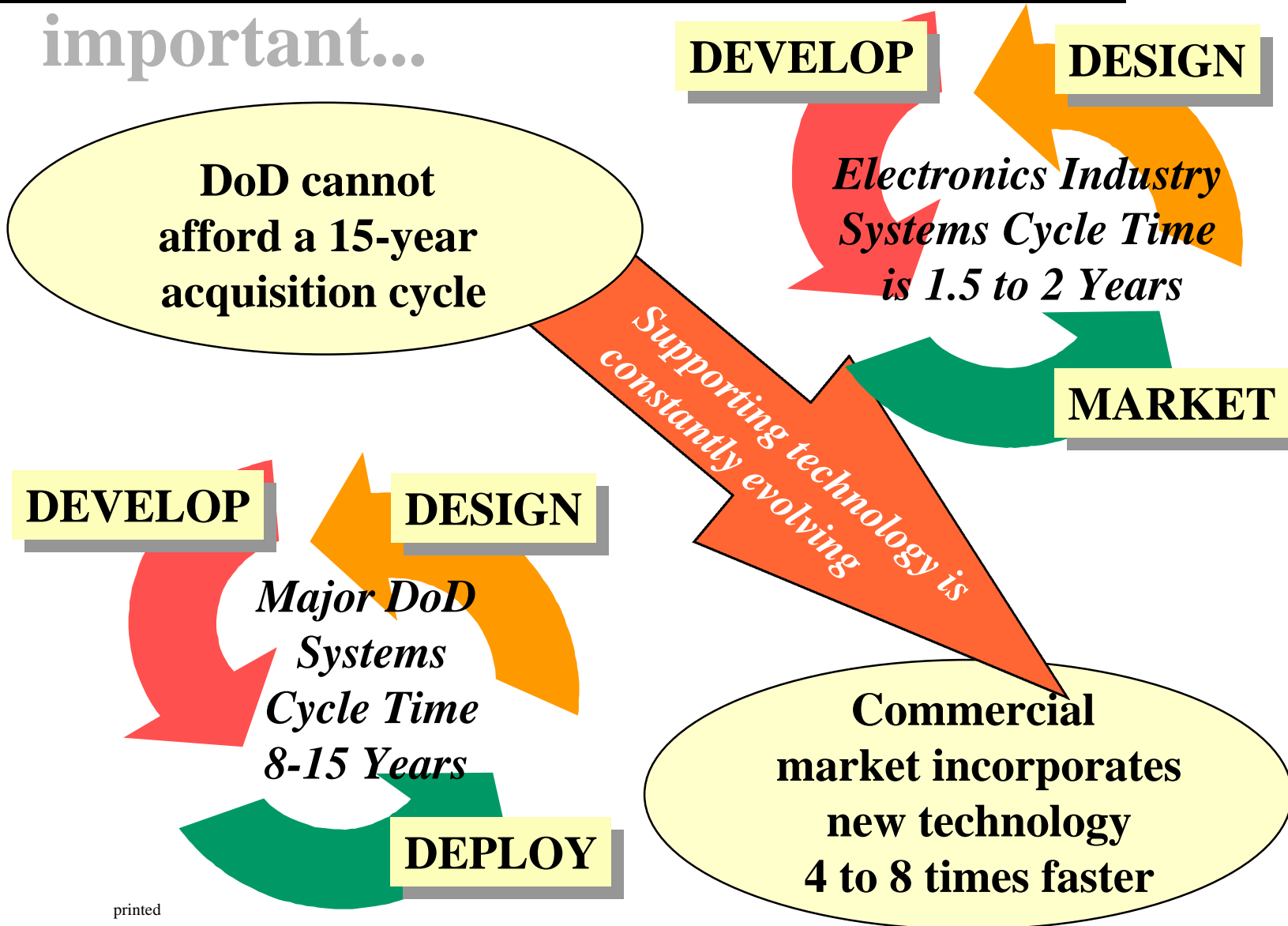
15 March 96: Directives expanded to include an open systems approach to all systems elements *(DoD 5000.2-R)*
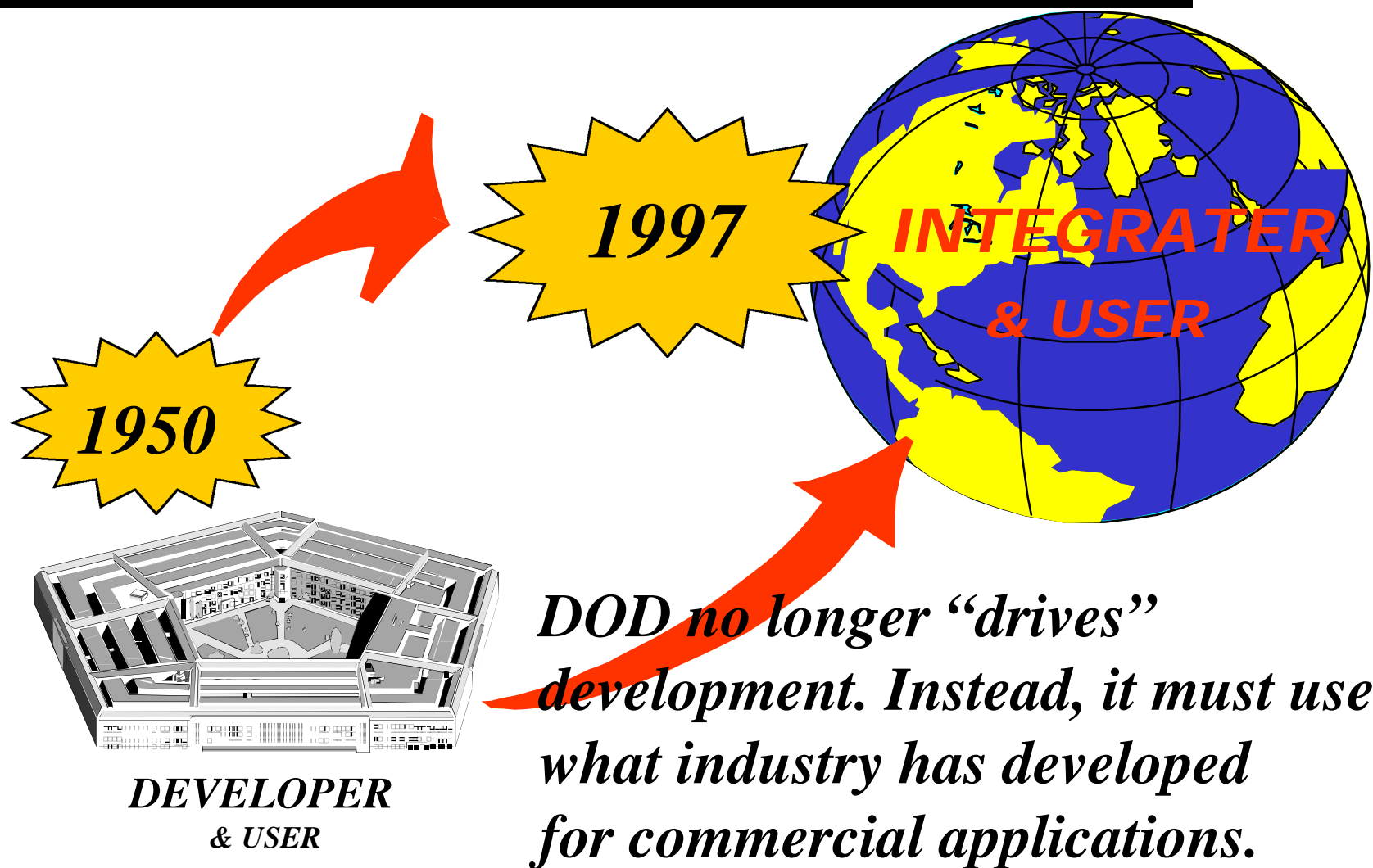
17 October 96: OS-JTF Satellite Broadcast "At DoD, it's our responsibility to make sure that we always have access to cutting edge technologies and products. Open systems help prevent ourselves from being locked into proprietary technology and outdated systems." *(Dr.Kaminski)*

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Here's why open systems are so important...

DoD cannot afford a 15-year acquisition cycle

Supporting technology is constantly evolving

DEVELOP

DESIGN

Electronics Industry Systems Cycle Time is 1.5 to 2 Years

MARKET

DEVELOP

DESIGN

Major DoD Systems Cycle Time 8-15 Years

DEPLOY

Commercial market incorporates new technology 4 to 8 times faster

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Open Systems
OS
Joint Task Force

Another reason...

1950

1997

INTEGRATER & USER

DEVELOPER
& USER

DOD no longer "drives" development. Instead, it must use what industry has developed for commercial applications.

Open Systems
OS
Joint Task Force

Open Systems Approach is ...

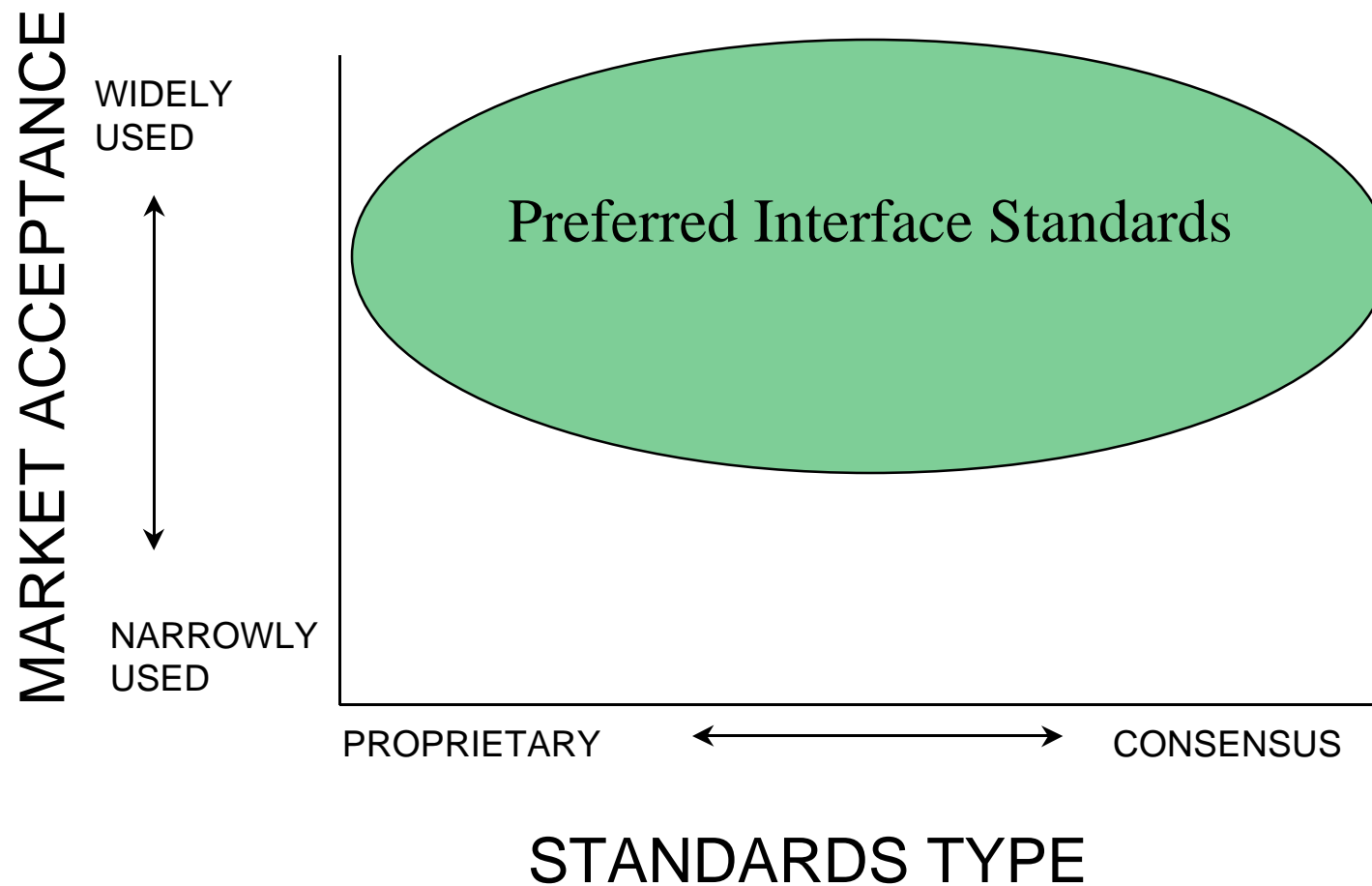## An integrated business and technical strategy

- A key element of a program's Acquisition Strategy

- A means to field superior systems more quickly and more affordably

DoD 5000.2-R (Change 3)

23 March 1998

For more information: http://www.acq.osd.mil/osjtf/OS5000Chg3.doc

OPEN SYSTEM INTERFACES

MARKET ACCEPTANCE

WIDELY
USED

Preferred Interface Standards

NARROWLY
USED

PROPRIETARY ←→ CONSENSUS
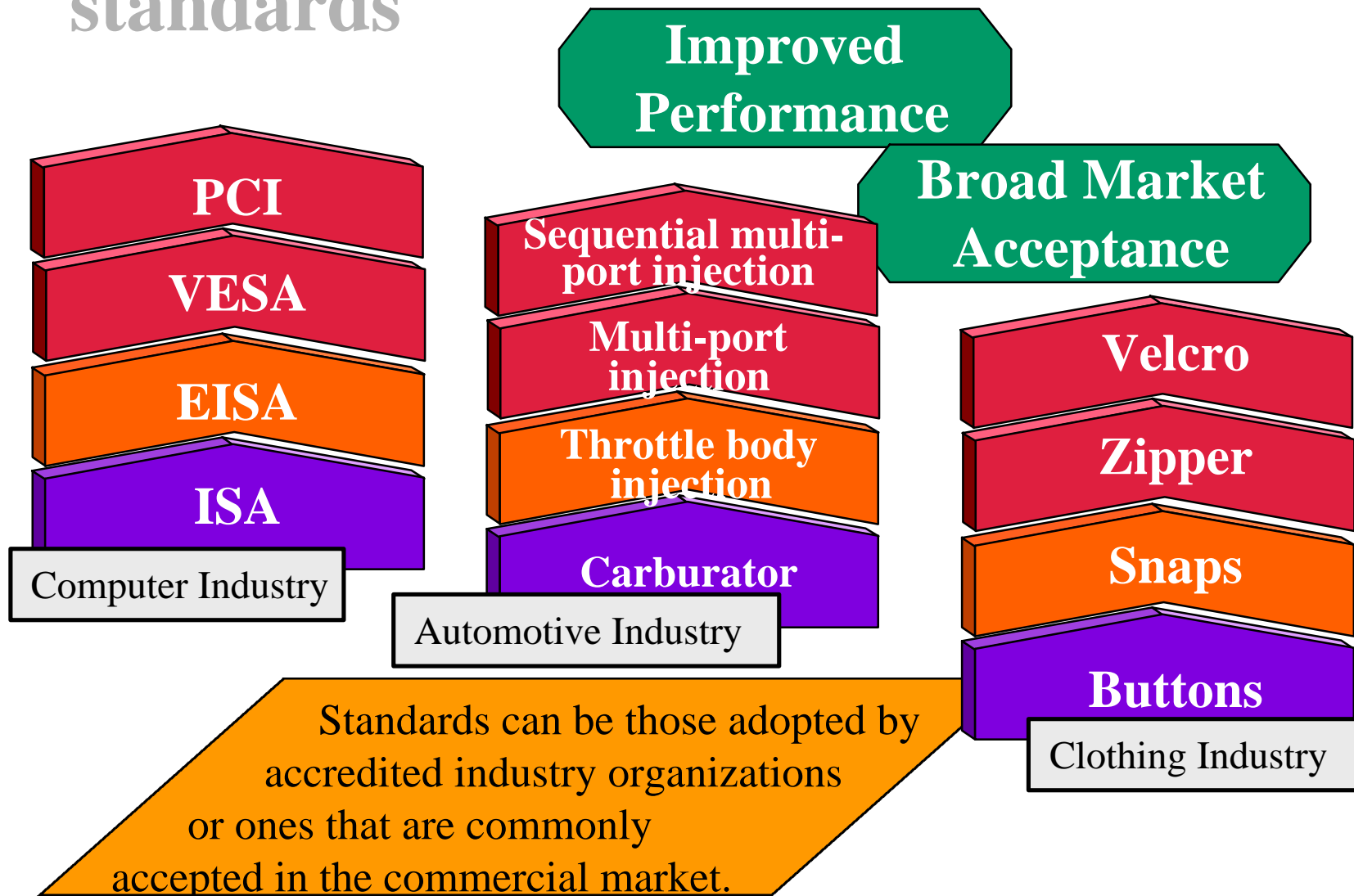
STANDARDS TYPE

Open systems also

Have well-defined, widely used, preferably nonproprietary interfaces and/or protocols

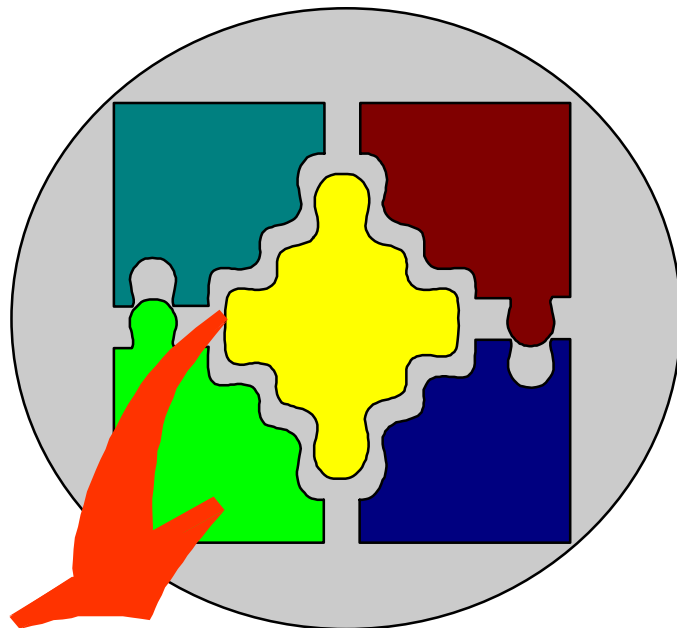*Use standards to define interfaces*

Provide for expansion or upgrade by incorporating or adding new technology

Facilitate improved systems capabilities for a wide range of applications
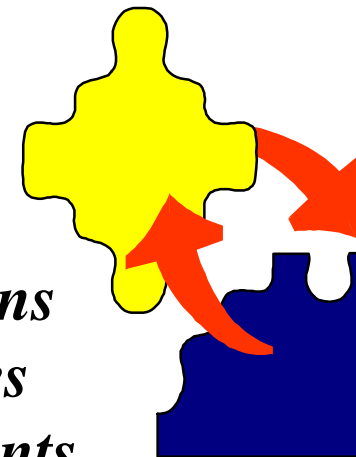
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Open systems use interface standards

Improved Performance

Broad Market Acceptance

PCI

VESA

EISA

ISA

Computer Industry

Sequential multi-port injection

Multi-port injection

Throttle body injection

Carburator

Automotive Industry

Velcro

Zipper

Snaps

Buttons

Clothing Industry

Standards can be those adopted by accredited industry organizations or ones that are commonly accepted in the commercial market.

The open systems framework

The circle represents the weapon system

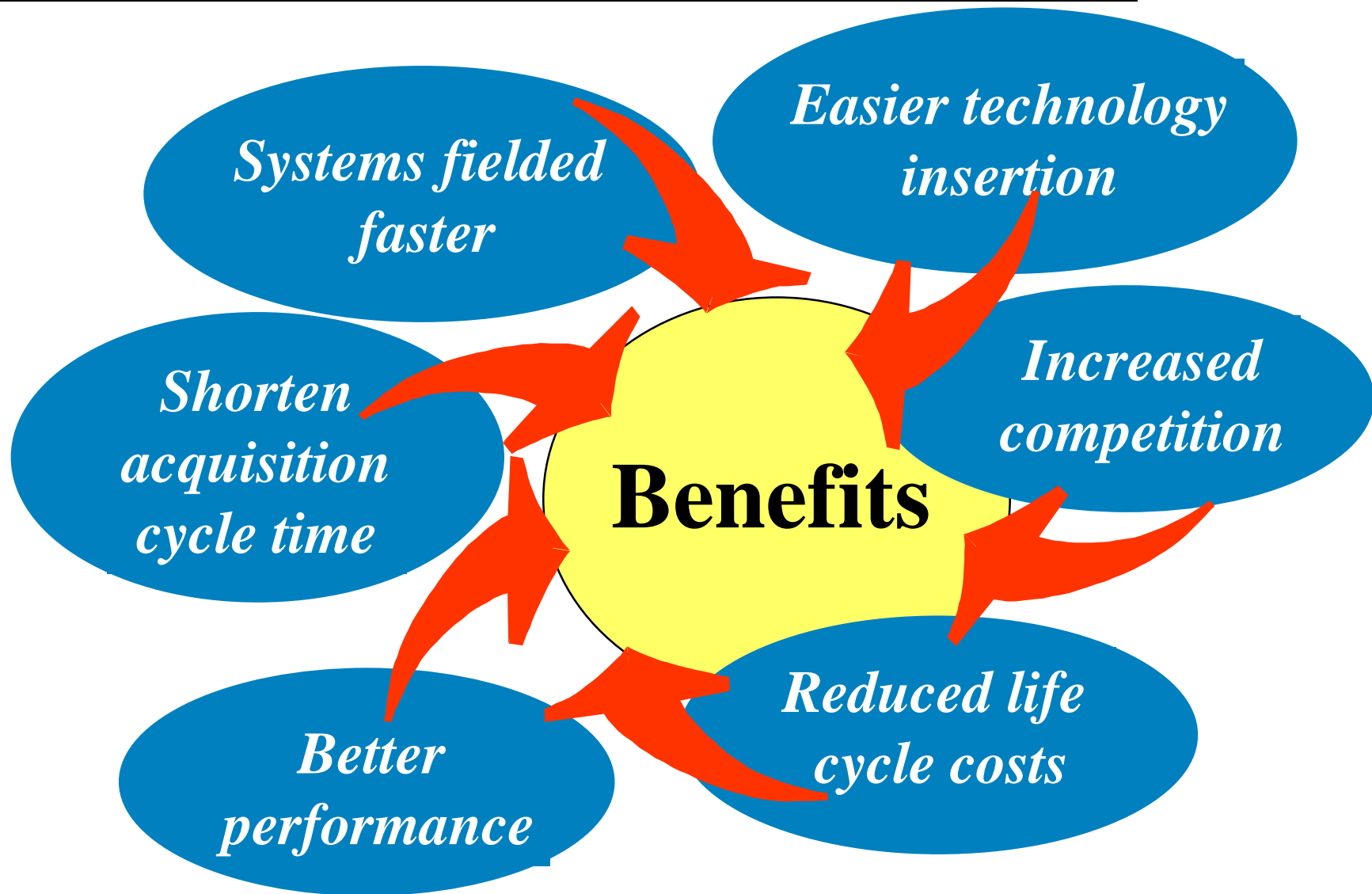*Puzzle pieces are components*

Performance based specifications spell out interfaces between components using standards to describe form, fit, and function. "How to" is left to the manufacturer.

Benefits of using open systems

Benefits

- Systems fielded faster
- Easier technology insertion
- Shorten acquisition cycle time
- Increased competition
- Better performance
- Reduced life cycle costs

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Challenges to implementing open systems

- Lack of supplier control
- Lack of technical data
- Ongoing product management
- Ongoing standards management
- Replacement spares risk
- Validation of compliance and/or conformance to standards

Challenges can be overcome!

Successful use of an open systems approach in current weapons acquisitions

Army Intelligence and Electronic Warfare Common Sensor (IEWCS)

IEWCS platforms

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"Open Systems Architectures are the only way to go in designing C3I systems. These architectures enable us to leverage commercial technology, to reduce support costs, and to continuously improve our war-fighting systems through product improvement."

Major General William H. Campbell
Program Executive Officer, US Army

May 31, 1996

IEWCS: the open systems approach applied to a legacy system

Replaced six legacy systems
- Superior performance
- Seamless upgrades with new technology

Reduced life cycle cost
- $1,009 million for Army
- $149 to $481 million for Marine Corps

Cut development time
- R & D cut by 64%
- Engineering development time by 29%

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The New Attack Submarine (NSSN)

"Open systems facilitates teaming with industry, encouraging the formation of partnerships across the public and private sector bridge. It illustrates the Navy's firm commitment to open systems as a foundation for all of our weapon systems' designs and future decisions."

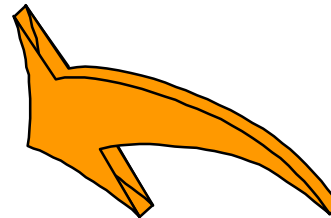RADM John F. Shipway, Commander, Naval Undersea Warfare Center

NSSN: using open systems from the beginning
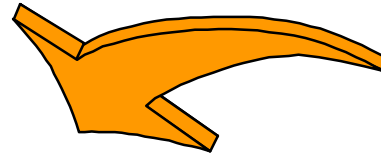
Early industry involvement in developing interface profiles

Used nondevelopmental items and non-government standards

Used OSA to enable "technology refresh windows"

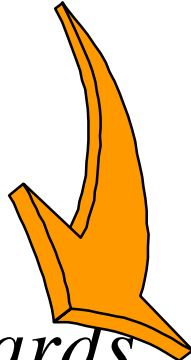# Joint Strike Fighter: providing a force for the future

The JSF is the largest military aircraft program ever undertaken which uses an open systems approach throughout. It calls for 3000 aircraft to be supplied to four customers: the US Air Force, US Navy, US Marine Corps and British Royal Navy.

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The success of the JSF relies heavily on using an open systems approach

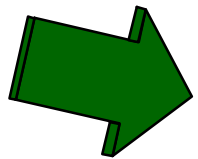*Common production line for multiple configurations to lower cost*

Extensive use of non-government standards, interfaces and processes in many of the C3I electrical and mechanical components
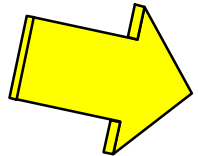
Uses commercial technology and leverages multiple DoD legacy programs

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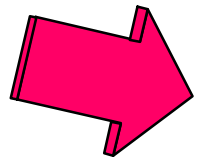
Some ways to get started...

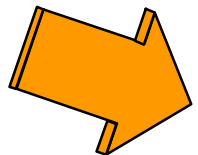Designate an open systems "champion" in your organization

Start a pilot project and learn as you go

Initiate horizontal technology integration (e.g. power supply)

Take advantage of products and services available from OS-JTF

The DoD vision of open systems

The DoD Vision:

DoD uses open systems to leverage commercial products and practices in order to field superior warfighting capability more quickly and more affordably.

Mission of the Open Systems Joint Task Force

Champion the establishment of an open systems approach (OSA) as the preferred technical approach and business strategy for the acquisition of all weapons systems electronics. Specifically, the OS-JTF will:

Make OSA an integral part of the acquisition process,

Provide assistance in implementing OS,

Promote acceptance of OS.

And, much more!

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How to contact OS-JTF

On the Worldwide Web at:
http://www.acq.osd.mil/osjtf
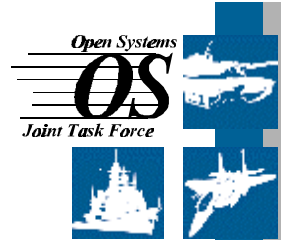
By E-Mail: osjtf@acq.osd.mil

Phone: (703) 578-6141
FAX: (703) 575-0534

Thank you.

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